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THIRD CYCLE UNIVERSITY STUDIES IN MALTA: CURRENT SCHEMES AND POSSIBLE STRUCTURED PROGRAMS OF STUDIES IN AGRICULTURAL ENGINEERING AND IN THE EMERGING DISCIPLINE OF BIOSYSTEMS ENGINEERING

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Abstract

The University of Malta has only recently approved the General Regulations for University Postgraduate Awards and the Doctor of Philosophy - Ph.D. - Degree Regulations. Based on these, Senate approved the Ph.D. Bye-Laws for the Faculty of Engineering. These bye-laws provide for admission into the programme of students with a background in the sciences and allows for collaboration with international institutions making full use of European Union exchange programs. Although Biosystems engineering is still a new concept in Malta, The Institute of Agriculture is actively promoting collaboration with the Faculty of engineering in this field of science.

Maltese education is legislated through the Education Act (chapter 327) of 1988 and its later amendments. This act attempts to consolidate and reform the law relating to Education in Malta. The Republic of Malta recognizes the right of every citizen to receive education and instruction without any distinction of age, sex, belief or economic means.

By means of this ACT, The University of Studies of Malta was refounded under the name of University of Malta and entrusted amongst other functions and powers to:

- (a) provide for instruction in such branches of learning and to make such provisions for research and the advancement and dissemination of knowledge as it may from time to time determine;
- (b) determine the conditions for admission into the University and into any course of study provided by it;
- (c) confer degrees and grant diplomas, certificates or other academic distinctions; and
- (e) make statutes, regulations and bye-laws in accordance with the provisions of this Act.

Through this ACT, the University of Malta is empowered to make statutes, regulations, and bye-laws in order to provide for its own administration and for the administration of its activities and of the entities created by it. The Senate has the general direction of the academic matters of the University and is the authority that:

- (a) regulates studies, research, documentation and examinations in the University by means of regulations;
- (b) makes regulations in accordance with the provision of this Act; and
- (c) establishes the conditions for admission into the University;

The Act stipulates that while regulations dealing with matters of an academic nature are made by the Senate, bye-laws are made by the Faculty Boards and shall bind the Faculty represented by the Faculty Board that made those byelaws. Hence, bye-laws made by the Faculty Board are referred to the Senate for its approval. Once approved by Senate, the bye-law are submitted to the University Chancellor for promulgation.

During 2008, the Senate of the University of Malta compiled and approved the General Regulations for University Postgraduate Awards and the Doctor of Philosophy - Ph.D. - Degree Regulations. The Chancellor of the University of Malta has promulgated these documents and are now established as Legal Notice 120 of 2008 and Legal Notice 117 of 2009 respectively. In the fourth meeting of Senate on the 28th April 2009, Senate approved the Ph.D. Bye-Laws for the Faculty of Engineering. These bye-laws may be cited as the Bye-Laws of 2009 in terms of the Doctor of Philosophy - Ph.D. - Degree Regulations, 2008 for the Degree of Doctor of Philosophy under the auspices of the Faculty of Engineering. These bye-laws are applicable as from October 2008 onwards.

The General Regulations for University Postgraduate Awards, the Doctor of Philosophy - Ph.D. - Degree Regulations and the above mentioned Ph.D. Bye-Laws for the Faculty of Engineering will be used as reference for this paper.

Faculty Doctoral Committee

The Senate, acting on the advice of the Board of the Faculty of Engineering, appoints the Faculty Doctoral Committee composed as follows:

The Dean of the Faculty (chairman) or his delegate

The 5 heads of department or their delegate,

In all cases the delegates being of Lecturer level or higher. The Faculty Doctoral Committee is responsible in following, as it deems fit, the progress of students in their research work, provided that it shall meet at least once a year to review the progress of each student. This Committee informs the Faculty Board periodically in writing, on the general performance of students.

Entry Prerequisites

Students may submit their application at any time of the year. Applicants have to be in possession of one of the following degrees obtained in the last fifteen years prior to registration:

(a) a Bachelor Honours degree in an area of study related to Engineering, Science or Mathematics obtained at First Class Honours or Second Class Honours (Upper Division), provided that the Faculty Doctoral Committee:

- (i) ascertains that applicants have a very strong background in the area of study related to the proposed area of research; and
- (ii) submits a clearly motivated recommendation for acceptance to the Board for eventual consideration by the Ph.D Committee and Senate;

(b) a Master's degree, in an area of study related to Engineering, Science or Mathematics;

(c) qualifications which the Board deems comparable to the degrees indicated in (a) and (b).

Applications have to be accompanied by a comprehensive research proposal outlining the proposed project, including research sources and materials. All applicants will be interviewed by the Faculty Doctoral Committee with the participation of the applicants' designated Principal Supervisor in order to assess the applicants' ability and potential to reach doctoral level. Applicants may be asked to demonstrate competence in those skills required by the nature of the proposed research. Those applicants who are in possession of the entry requirements, but obtained more than fifteen years prior to their application, may be required to produce sufficient proof of their competence to carry out research at the required level. The result of the interview shall be made available to the Sub-Committee, together with the Board's recommendation, for its consideration. The Sub-Committee shall recommend to Senate the acceptance of all applications which satisfy the requirements.

After 12 months of full-time study or 24 months of part-time study, students are required to submit a report on their research work, preferably in the form of a technical report, for consideration by an *ad hoc* board appointed by the Board of the Faculty of Engineering. The *ad hoc* board shall be composed of a chairman, who shall be the head of the department concerned or his delegate, and two examiners, one of whom shall be the Principal Supervisor and the other a member of the Faculty. The board gives favourable consideration to work published or accepted for publication in refereed technical journals or conferences.

The *ad hoc* board shall examine the student orally and shall submit a written report for consideration by the Faculty Doctoral Committee in the first instance. The report shall contain recommendations according to the provisions of the Principal.

Regulations and shall either:

- (i) declare the work presented has the potential to reach required standards of a doctoral degree and recommends transfer; or
- (ii) determine that the student's work has not reached a sufficient standard to warrant recommendation of the transfer; or
- (iii) advise that the student be given up to 12 months in order to complete his/her studies for the award of an M.Phil. Degree.

Senate allows the transfer, the work already done for the M.Phil. Degree shall count towards the requirements for the Ph.D. Degree.

Duration of Study

The duration of studies for the Ph.D. Degree shall extend over three years of full-time study or six years of part-time study. In the case of students accepted on the basis of a first degree, the period of study shall normally extend for not less than four years. On specific recommendations, Senate may grant students an extension of studies of up to two years in order to enable them to complete their studies, irrespective of whether they are registered on a full-time or a part-time basis.

Minimum Number of Assigned Courses

At the discretion of the Board of the Faculty of Engineering and after approval by Senate, individual students may be requested to successfully complete a number of study-units during the course of their studies. Nonetheless, accepted applicants will be first registered for the M.Phil. degree. All students are required to participate in the Faculty's research and teaching programmes. They are required to attend post-graduate research seminars organised by the Faculty. They are also required to deliver at least one presentation and present at least one poster during such seminars during their registration for the Degree.

Selection of Supervisor and Research Topic

Applicants will only be accepted to register for the Ph.D. Degree after Senate is assured that the Faculty where the research will be carried out can provide suitable facilities for the proposed research as well as supervisors who can provide regular supervision taking account of their academic record and expertise and other commitments. Senate, on the recommendation of the Board and the Sub-Committee, will then appoint a Principal Supervisor from among the members of the academic staff of the University. Such a member of staff shall have appropriate qualifications, including extensive knowledge and research experience in the broad subject area of the student and current involvement in research groups. Senate may also appoint a co-supervisor or adviser to provide the link if the research is of an interdisciplinary nature or if the research is being undertaken in collaboration with another organisation.

International Period of Learning

All students who undertake their research work at the University are encouraged to undertake a period of study at an overseas higher education and/or research institution in order to gain wider research experience. Applicants may be accepted to register for the Ph.D. Degree and to work for a large proportion of their time away from the University of Malta, provided that:

- (a) they shall work in a field of major relevance to the University department in which their research is to be carried out;
- (b) the facilities at the place in which they will be carrying out their research shall be equivalent to or better than those of the department or complementary to those of the department and are essentially required for the work and the department concerned shall provide written evidence of this to the Board;
- (c) they shall normally spend a total of at least three weeks per semester on the Malta campus during which period they shall hold meetings with the Principal Supervisor; and
- (d) an adviser is appointed to follow the student regularly at the off-campus place of study/research.



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Publications

The thesis or parts thereof has been of peer-reviewed publishable quality level. In submitting material for publication, both students and supervisors have to acknowledge the respective contribution and that of adviser/s, and of any other members of staff or students in any published material or presentation in accordance with internationally recognised guidelines on authorship.

International Dimension of Thesis

Senate may allow students to undertake research in collaboration with research institutions other than universities if such collaboration would:

- (a) extend the student's own experience;
- (b) provide a wider range of expertise to assist in the development of the research work; and
- (c) enable the student to become a member of a wider research community.

Such collaboration shall normally involve essential access by the student to one or more of the following resources of the collaborating research institution: taught study-units, equipment, facilities, premises, supervision by staff, data. The University may allow students to participate in research projects where data generated jointly by a group of researchers is used for the writing of theses, provided that each student writes a separate thesis. Where the University, with the approval of Senate, enters into an agreement with other universities for the granting of a joint or double degree, then the Ph.D. Degree may be awarded:

- (a) in the case of a joint degree, jointly on one certificate by all the partner universities and shall be conferred at one of the partner universities as agreed among them; or
- (b) in the case of a double degree, separately by each partner university.

Final Evaluation

Following the appropriate period of supervised research, the thesis should consist of the student's account of investigations and research and have to show evidence of originality by the discovery of new facts, the development of new theory and/or by the exercise of independent critical power and constitutes an addition to knowledge. The thesis or parts thereof should be of peer-reviewed publishable quality. Six months before the submission deadline students shall be informed that they are required to inform the Faculty that they will be submitting their thesis for examination not less than three months before the submission deadline. The Board of the Faculty will recommend to Senate the appointment of the Board of Examiners, and shall include a Chairman, an external examiner, and at least another member, provided that the oral examination of the thesis shall be conducted by at least three examiners including the external examiner. All the members of the Board of Examiners are academics experienced in research in the general area of the student's thesis and where practicable, shall have experience as specialists in the topic to be examined, provided that two of the examiners, including the external examiner, shall be academics who command authority within the area of research concerned. The Principal Supervisors, co-supervisors and advisers shall be precluded from being examiners but the Principal Supervisor shall be invited to attend as an observer during the oral examination. He/she may contribute if invited



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to do so by the members of the Board of Examiners but must withdraw prior to the final deliberations of the Board of Examiners.

Students are required to defend their thesis orally and are expected to present a synopsis of the thesis of about 20 minutes and answer questions from members of the Board of Examiners. The Ph.D. Degree shall be awarded upon the successful defence of a thesis containing original and significant contributions to knowledge.

Conclusions

The new approved Ph.D. Bye-Laws for the Faculty of Engineering allow the admission of students with a background in the sciences. The Institute of Agriculture is presently evaluating the possibility of offering a 1st and 2nd cycle degree in some areas of Biosystems engineering. Ideally graduates from the Institute of Agriculture will take advantage of the 3rd cycle within the Faculty of Engineering.

References:

Education Act Chapter 327 as of April 2007 (last amended version)

General Regulations for University Postgraduate Awards, 2008; Legal Notice 120 of 2008. – Malta Government Gazette No. 18,227 – 11 April 2008

Doctor of Philosophy - Ph.D. - Degree Regulations, 2008; Legal Notice 293 of 2008-Malta Government Gazette No. 18,342 - 18 November, 2008 as amended by: Legal Notice 117 of 2009 – Malta Government Gazette No. 18,404 – 17 April, 2009.

Bye-Laws of 2009 in terms of the Doctor of Philosophy - Ph.D. - Degree Regulations, 2008 for the Degree of Doctor of Philosophy under the auspices of the Faculty of Engineering